

REMARKS

The application has been reviewed in light of the Office Action dated August 5, 2003. Claims 1, 3-5, 9 and 12-16 were pending, with claims 1, 12 and 13 being in independent form. Claims 2, 6-8, 10 and 11 were previously canceled without prejudice. By this Amendment, Applicant has added new dependent claims 17 and 18, and amended claims 1, 5 and 16 to place the claims in better form for examination, by removing informalities, and/or to clarify the claimed invention, without narrowing the scope of the claimed invention. Accordingly, claims 1, 3-5, 9 and 12-18 are now pending and presented for examination.

Claims 1 and 16 were objected to as having informalities. Claim 5 was objected to under 37 C.F.R. §1.75(c) as purportedly being of improper dependent form for allegedly failing to further limit the subject matter of a previous claim.

Claims 1, 5 and 16 have been amended to place the claims in better form for examination, by removing informalities (claims 1 and 16), and/or to clarify the claimed invention (claim 5), without narrowing the scope of the claimed invention.

Accordingly, withdrawal of the objections to the claims is respectfully requested.

Claims 1, 3-5, 9 and 12 were rejected under 35 U.S.C. §103(a) as purportedly unpatentable over U.S. Patent No. 5,245,361 to Kashimura et al. in view of U.S. Patent No. 4,931,811 to Cowger et al. Claims 13-16 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Patent No. 4,633,274 to Matsuda.

Applicant has carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claims 1, 12

and 13 are patentable over the cited art, for at least the following reasons.

This application relates to inkjet recording apparatuses and recording heads and ink reservoir units for the inkjet recording apparatuses.

In the typical conventional inkjet printer, an interconnection tube is provided to supply ink from an ink reservoir to the recording head. However, the conventional inkjet recording apparatus which uses such an interconnection tube has the disadvantages of being complex, having an increased size, and requiring undue work on a part of the user to change the ink reservoir.

It has also been proposed to provided an inkjet apparatus including an integral cartridge wherein the recording head is fixed upon the ink reservoir, thereby eliminating the need to include an interconnection tube between the recording head and the ink reservoir. However, since the integral cartridge is costly and must be replaced when the ink reservoir is used up, an inkjet apparatus including such an integral cartridge has a drawback of having a high running cost.

The present application provides improvements to ink-jet recording apparatuses (and components thereof) whereby the ink delivery mechanism does not cause the apparatus to have an undue cost, size and/or complexity. For example, a recording head unit and an ink reservoir unit of an ink-jet recording apparatus can be provided with respective guide members which connect the recording head unit to the ink reservoir unit and guide the ink reservoir unit onto the recording head unit so that the ink reservoir unit can be aligned with and removebly mounted to the recording head unit.

For example, independent claim 1 is directed to a recording head

of an inkjet recording apparatus which comprises a recording head unit and an ink reservoir unit. The recording head unit is supplied with ink for recording an image on a recording object by forming a jet of the ink, and comprises a nozzle, a passage of ink provided in communication with the ink nozzle, an energization part provided on the passage for applying energy to the ink in the passage to form the jet, and an ink inlet formed in communication with the passage for receiving the ink. The ink reservoir unit supplies ink to the inlet of the recording head part. The recording head unit includes a first guide member for connecting the recording head unit to the ink reservoir unit, and the ink reservoir unit including a second guide member for mating with the first guide member and guiding the ink reservoir unit onto the recording head unit so that the ink reservoir unit can be aligned with and removably mounted to the recording head unit. The first and second guide members are so formed that the first and second guide members establish, when the ink reservoir unit is mounted upon the recording head unit, a detachable engagement with each other in a manner, such that the ink in the reservoir unit flows to the passage in the recording head unit.

Applicant maintains that the cited art does not disclose or suggest the claimed invention.

Kashimura, as understood by Applicant, is directed to an ink jet recording device having a recording head with an integrated ink tank, and a carriage onto which the recording head can be detachably mounted.

The Office Action states that projection 311b and opening 312b of Kashimura disclose the first and second guiding members of the claimed invention. Applicant respectfully disagrees.

As discussed in Kashimura at column 17, line 66 through column

18, line 43, the projection 311b can be fitted in the opening 312b only after the projection 311b and the opening 312b are positioned opposite to each other. However, while the projection 311b and the opening 312b have a function of engaging each other, they do not having a guiding function, that is, guiding the ink reservoir onto the recording head unit, as provided by the claimed invention recited in claim 1.

As shown in FIG. 17 of Kashimura, the projection 311b and the opening 312b engage each other in a direction perpendicular to the direction A that the head element 311 must be moved to guide it into the ink tank.

Cowger, as understood by Applicant, is directed to a thermal ink jet pen having a main ink reservoir. Cowger was cited as purportedly disclosing (a) a stainless steel wire mesh filter 26 for preventing air from an ink reservoir being drawn down to the recording head, and (b) a vent 30 closed by a removable seal member for supplying and replenishing air to the ink reservoir.

However, Cowger, like Kashimura, does not disclose or suggest a mechanism for guiding the ink reservoir unit onto the recording head unit so that the ink reservoir unit can be aligned with and removably mounted to the recording head unit. Thus, the combination of Cowger and Kashimura does not disclose or suggest the claimed invention of the present application.

Applicant does not find disclosure or suggestion in the cited art, however, of a recording head of an inkjet recording apparatus which comprises a recording head unit and an ink reservoir unit, wherein the recording head unit includes a first guide member for connecting the recording head unit to the ink reservoir unit, and the ink reservoir unit includes a second guide member for mating with the

first guide member and guiding the ink reservoir unit onto the recording head unit so that the ink reservoir unit can be aligned with and removably mounted to the recording head unit, the first and second guide members being so formed that the first and second guide members establish, when the ink reservoir unit is mounted upon the recording head unit, a detachable engagement with each other in a manner, such that the ink in the reservoir unit flows to the passage in the recording head unit, as provided by the claimed invention recited in independent claim 1. Since the cited art does not disclose or suggest each and every feature of the claimed invention, the cited art does not render the claimed invention unpatentable.

Independent claim 12 is patentably distinct from the cited art for at least similar reasons.

Independent claim 13 is directed to a recording head for an inkjet recording apparatus which comprises a recording head unit and an ink reservoir unit. The recording head unit comprises a nozzle for ejecting the jet, a passage of ink provided in communication with the ink nozzle for supplying the ink to the nozzle, a first guide member, an energization part provided in the passage for applying energy to the ink in the passage to form the jet, and an ink inlet formed in communication with the passage for receiving the ink. The ink reservoir unit comprises a second guide member for mating with the first guide member and guiding the ink reservoir onto the recording head unit so that the ink reservoir can be aligned with and removably mounted to the recording head unit.

Matsuda, as understood by Applicant, is directed to an ink-jet recording apparatus which is provided with means for mounting removal of the recording head from a support member 5 of the apparatus main

body. According to Matsuda, the recording head substrate is slid in a groove 28 of the support member 5.

Applicant does not find disclosure or suggestion in Matsuda, however, of a recording head comprising a recording head unit and an ink reservoir unit, wherein the recording head unit comprises a first guide member, and the ink reservoir unit comprises a second guide member which mates with the first guide member and guides the ink reservoir onto the recording head unit so that the ink reservoir can be aligned with and removably mounted to the recording head unit, as provided by the claimed invention recited in claim 13.

Accordingly, for at least the above-stated reasons, Applicant respectfully submits that independent claims 1, 12 and 13, and the claims depending therefrom, are patentable over the cited references

This response is being submitted concurrently with a Petition For Extension Of Time (to extend the due date for responding to the August 5, 2003 Office Action from November 5, 2003 to January 5, 2004), as well as authorization to charge the \$420.00 fee for the two-month extension of time to our Deposit Account No. 03-3125.

If a petition for an additional extension of time is required to make this response timely, this paper should be considered to be such a petition, and the Commissioner is authorized to charge the requisite fees to our Deposit Account No. 03-3125.

The Office is hereby authorized to charge any additional fees that may be required in connection with this amendment and to credit any overpayment to our Deposit Account No. 03-3125.

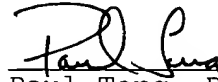
If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

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Reconsideration and allowance of this application are respectfully requested.

Respectfully submitted,



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